SAND AND MUD BAR (BLACKWATER SAND BAR SUBTYPE)

Concept: Sand and Mud Bars are communities of soft sediment deposits along rivers, nonforested because of recent deposition, frequent reworking, or frequent scouring. Vegetation generally is sparse or patchy. The Blackwater Sand Bar Subtype covers examples on higher sandy bars along blackwater rivers.

Distinguishing Features: The Sand and Mud Bar type is distinguished by the combination of occurrence on soft sediments along a river shoreline and lack of a well-developed tree canopy. Vegetation ranges from herbs to shrubs, often at low density, and tree cover is low to nonexistent. Sand and Mud Bar should be recognized only where the patch is wider than the narrow band of shrubs present on most riverbanks. The Blackwater Sand Bar Subtype is distinguished from the Blackwater Drawdown Bar Subtype by being higher, generally exposed when the river is not in flood. It usually has a clean sand substrate, though piles or layers of organic debris may be present. The vegetation may be sparse or locally dense but usually includes abundant medium to tall forbs and grasses, such as *Coleataenia rigidula* ssp. *rigidula*. Tree seedlings may be present, as may a number of native or invasive ruderal herbaceous species.

Synonyms: *Panicum rigidulum - Hibiscus moscheutos* Herbaceous Vegetation (CEGL004273). Ecological Systems: Atlantic Coastal Plain Small Blackwater River Floodplain Forest (CES203.249).

Sites: Sand and Mud Bar (Blackwater Subtype) communities occur wherever well-developed bars are present along blackwater rivers. Most are point bars on the insides of meanders but they may occur on bars along straight reaches as well. Bars vary in slope and in elevation above the river but all are lower than the river banks. The substrate is well-sorted sand in most parts.

Soils: No well-developed soil is present on the bars. The substrate consists of newly deposited or reworked sand, sometimes with layers of leaf litter or debris buried by later sediment deposition.

Hydrology: Sand and Mud Bars are frequently flooded. Natural flood regimes on blackwater rivers tend to be variable, with flooding caused by storms possible at any time of year. Though bars are deposited where the river current is the slowest along its course, during high flows currents are sometimes swift enough to scour or rework the surface. Sediment deposition may be heavy enough in some parts to be an important disturbance to the vegetation. When the river is low, the sand substrate of these bars may lead to excess drainage and dry conditions.

Vegetation: Sand and Mud Bar communities have sparse to moderately dense herbaceous vegetation with variable cover of small woody plants. The most typical woody species in the Blackwater Subtype are *Betula nigra, Salix nigra, Taxodium distichum*, and on the Waccamaw and Lumber River, *Planera aquatica*, occurring as seedlings or as stunted individuals. Frequent herbs are *Coleataenia rigidula*, *Lindernia dubia*, *Hydrocotyle prolifera, Hydrocotyle verticillata, Lindernia dubia, Pluchea camphorata, Persicaria punctata*, other *Persicaria* spp., *Boehmeria cylindrica, Cyperus polystichyos, Mikania scandens, Lobelia elongata,* and various *Dichanthelium* spp. Less frequent but apparently characteristic species include *Fimbristylis autumnalis, Eupatoriuim capillifolium, Ludwigia alternifolia, Hypericum mutilum, Chasmanthium laxum,*

Erianthus sp., *Leersia oryzoides, Agrostis perennans*, and on the Waccamaw River, *Sabatia kennedyana, Hymenocallis pygmaea*, and *Helenium flexuosum*.

Range and Abundance: Ranked G2G3 but more likely G3. This community is present in numerous patches on the upper and middle reaches of the larger blackwater rivers in North Carolina, though the aggregate acreage is small. It occurs in South Carolina and possibly Georgia, but the NVC association is not attributed more widely.

Associations and Patterns: Sand and Mud Bars occur along river channels, generally on the inside of active meanders. They generally grade to Blackwater Levee/Bar Forest, Blackwater Bottomland Hardwoods, or Cypress–Gum Swamp away from the river.

Variation: Two variants are recognized:
1. Typic Variant occurs on most blackwater rivers.
2. Waccamaw Variant occurs on the Waccamaw River and potentially on lower Juniper Creek. It is marked by distinctive floristic elements, such as *Sabatia kennedyana*. The distinctive hydrologic regime of the Waccamaw River may be important to its distinctive character.

Extreme heterogeneity at fine scales within patches, along with potential for drastic changes in vegetation with time, makes recognition of consistent variants difficult. There presumably also are significant differences between areas that have stabilized and are undergoing directional succession compared to those that are regularly reworked or scoured.

Dynamics: Sand and Mud Bars are among the most dynamic natural communities in North Carolina. Their location is tied to river channel patterns and is predictable but the vegetation and even the configuration of the site may potentially be changed drastically by a single flood. Slower changes, over periods of years or dozens of years, also occur as river meanders migrate and older portions of bars become more sheltered or stabilize. The relatively pure sand of most blackwater bars makes them more easily eroded than brownwater bars and may contribute to less stability. At the same time, the lack of clay and silt deposition leads to lower soil fertility and greater potential for dry conditions.

Comments: Study of this community is limited. Plot data are limited or absent. Examples have been described for multiple sites on the Waccamaw and Lumber River but there is little description for the Black, Northeast Cape Fear, or other rivers.

Rare species: Vascular plants: *Hymenocallis pygmaea* and *Sabatia kennedyana*.

References: